

Attorney Docket: 920214.00005
Applicants: Polt & Bilsky
Application No. 10/540,443 Filed: 06/22/2005
Group Art Unit: 1639
Reply to Office Action Dated: June 5, 2007
Response Dated: October 25, 2007
Examiner: Christopher M. Gross

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the above-identified application.

Listing of Claims:

1. (Currently amended) A method for delivering analgesia to an individual comprising:
administering to the bloodstream of the individual an effective amount of an analgesic molecule to be transported across the a blood-brain barrier, wherein the analgesic molecule is a glycosylated peptide enkephalin having comprising a formula of (L)-Tyr-(D)-x-(L)-Gly-(L)-Phe-(L)-Leu-(L)-Ser-(β -disaccharide)CONH₂, wherein the peptide region of the molecule comprises (L)-Tyr-(D)-x-(L)-Gly-(L)-Phe-(L)-Leu-(L)-Ser, defined as SEQ ID NO: 35, wherein the peptide binds to an opioid receptor, wherein (L)-Ser is linked to the β -disaccharide through an O-linkage, wherein "x" is a D-amino acid, defined as D-threonine, and wherein the β -disaccharide sugar is selected from the group consisting of β -lactose, β -maltose and β -melibiose

~~(i) a message sequence which binds to an opioid receptor YGGFL, YtGFL, YsGFL, or YaGFL wherein the amino acid residue "t" is a D-threonine, "s" is a D-serine, and "a" is a D-alanine; and~~

~~(ii) a transport sequence comprising an L-serine glycosylated through a beta O-linkage with a disaccharide, wherein the glycosylated serine is positioned at the carboxyl terminus of the peptide and is attached to the message sequence of the peptide, and wherein the disaccharide selected from the group consisting of lactose, maltose and melibiose.~~

2. (Canceled)

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3. (Currently amended) A The method as claimed in claim 1, wherein the glycosylated enkephalin is selected from the group consisting of SEQ ID NO:25, SEQ ID NO:27 and SEQ ID NO:30 ~~glycosylated enkephalin is selected from the group consisting of YtGFLS (β -Lactose) CONH₂ identified as MMP 2200; YtGFLS (β -Maltose) CONH₂ identified as MMP 2230, and YtGFLS (β -Melbiose) CONH₂ identified as MD 2005, wherein the "t" is a D-threonine and the S is an L-serine glycoside amide.~~

4. (Currently amended) A method for modifying a peptide enkephalin ~~having the amino acid sequence YtGFLS-NH₂~~ to enable the peptide to be transported across the a blood-brain barrier, the method comprising the step of:

glycosylating ~~the an L-Ser serine residue of the a peptide, (L)-Tyr-(D)-x-(L)-Gly-(L)-Phe-(L)-Leu-(L)-Ser defined as SEQ ID NO: 35, YtGFLS-NH₂~~ with a disaccharide moiety to form a glycosylated peptide enkephalin having a formula of (L)-Tyr-(D)-x-(L)-Gly-(L)-Phe-(L)-Leu-(L)-Ser-(β -disaccharide)CONH₂, wherein the peptide binds to an opioid receptor, wherein L-Ser of the peptide is linked to the β -disaccharide through an O-linkage, wherein "x" is D-threonine, wherein the disaccharide is selected from the group consisting of lactose, maltose or and melbiose, wherein the modified peptide enkephalin is selected from the group consisting of such that the peptide is modified as identified by any one of SEQ ID NO:25, SEQ ID NO:27 and SEQ ID NO:30 YtGFLS[[-]] (β -Lactose) CONH₂, YtGFLS (β -Maltose) CONH₂, and YtGFLS[[-]] (β -Melbiose) CONH₂, wherein the "t" is a D-threonine and the S is an L-serine glycoside amide.

5.-6. (Canceled)

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7. (Currently amended) A pharmaceutical composition comprising a glycosylated enkephalin peptide capable of being transported across ~~the~~ a blood-brain barrier, the glycosylated peptide comprising a formula of (L)-Tyr-(D)-x-(L)-Gly-(L)-Phe-(L)-Leu-(L)-Ser-(β -disaccharide)CONH₂, wherein "x" is D-threonine, wherein the disaccharide is selected from the group consisting of lactose, maltose and melibiose, wherein the glycosylated peptide is selected from the group consisting of SEQ ID NO:25, SEQ ID NO:27 and SEQ ID NO:30

~~the glycosylation being a disaccharide, the peptide having the formula YtGFLS (β -disaccharide)CONH₂, YsGFLS (β -disaccharide)CONH₂, or YaGFLS (β -disaccharide)CONH₂, wherein the disaccharide is selected from the group consisting of lactose, maltose, and melibiose, and wherein the amino acid residue "t" is a D-threonine, "s" is a D-serine or "a" is a D-alanine, and wherein the S is an L-serine glycoside amide.~~

8. (Currently amended) A glycosylated enkephalin peptide compound ~~comprising having~~ the formula (L)-Tyr-(D)-Thr-(L)-Gly-(L)-Phe-(L)-Leu-(L)-Ser-(β -disaccharide)CONH₂, wherein the disaccharide is β -melibiose, the compound defined as SEQ ID NO:30, and YtGFL-(β -melibiose)CONH₂, wherein the compound is capable of transportation across the blood-brain barrier, and wherein the "t" is a D-threonine and the L-serine glycoside amide.

9. (Currently amended) A glycosylated enkephalin peptide compound ~~comprising the~~ formula (L)-Tyr-(D)-Thr-(L)-Gly-(L)-Phe-(L)-Leu-(L)-Ser-(β -disaccharide)CONH₂, wherein the disaccharide is a β -lactose, the compound defined as SEQ ID NO:25 YtGFLS-(β -lactose)CONH₂, and wherein the compound is capable of transportation across the a blood-brain barrier, and wherein the "t" is a D-threonine and the S is an L-serine glycoside amide.

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10. (Currently amended) A glycosylated enkephalin peptide compound comprising the formula (L)-Tyr-(D)-Thr-(L)-Gly-(L)-Phe-(L)-Leu-(L)-Ser-(β-disaccharide)CONH₂, wherein the disaccharide is a β-maltose, the compound defined as SEQ ID NO:27 YtGFLS[[~~L~~]] (β-maltose) CONH₂, and wherein the compound is capable of transportation across the a blood-brain barrier, ~~and wherein the "t" is a D-threonine and the S is an L-serine glycoside amide.~~

11. - 13. Cancelled.